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Public Health Reports

Treasury Department, United States Marine-Hospital Service. Published in accordance with act of Congress approved February 15, 1893.

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UNITED STATES.

Precautions against plague—(Continued from last issue).

USE OF THE ANTIPESTE SERUM IN THE TREATMENT OF PLAGUE AND IN IMMUNIZING AGAINST THE DISEASE.—IMMUNIZATION AGAINST PLAGUE BY COMBINED USE OF ANTIPESTE SERUM AND HAFFKINE PROPHYLACTIC.

The report of Chalmette and Salimbini (Annales of the Institut Pasteur, December, 1899) shows as a result of their observations and experiments during the plague epidemic in Oporto, Portugal, that much larger doses of the antipeste serum may be used and are sometimes demanded than had heretofore been deemed sufficient.

Their report also shows that while the use of the Haffkine Prophylactic may be attended with danger among those who had been exposed to the infection of the disease prior to the inoculation, the use of a preliminary immunizing dose of antipeste serum, followed by the injection of a dose of the Haffkine Prophylactic, removed this element of danger and conferred an immunity of probably longer duration than would be produced by the exhibition of the serum alone. The following letter embodying these points was therefore addressed to Surg. D. A. Carmichael at Honolulu, for his information and guidance.

At the same time, a further supply of 1,900 doses of the Haffkine Prophylactic, prepared in the hygienic laboratory of the United States Marine-Hospital Service, was sent him for use in the prevention of the spread of the disease.

JANUARY 27, 1900.

SIR: You are informed that, according to the experience of Chalmette in the outbreak of plague at Oporto, it was found that larger doses of antipeste serum are needed to insure a cure than was at first announced.

Between 160 and 200 c. c. should be given during the first forty-eight hours of the disease. In severe cases 20 or 40 c. c. of this amount should be injected into a vein.

In immunizing with the serum, use 5 to 10 c. c. every fifteen days.

In case the Haffkine's Prophylactic can not be administered on account of exposure to the disease the mixed plan of immunization may be used. This consists of giving 5 or 10 c. c. of antipeste serum, and, three days later, 1 c. c. of the Haffkine's Prophylactic.

Respectfully, WALTER WYMAN,
Supervising Surgeon-General U. S. M. H. S.

Surg. D. A. CARMICHAEL,
U. S. Marine-Hospital Service, Honolulu, Hawaii.

THE PREVENTION OF CONSUMPTION.

[Circular No. 54—State Board of Health of Maine—Revised Edition of 1900.]

That insidious disease which we call consumption, phthisis, or tuberculosis of the lungs, is the most terrible destroyer of lives with which civilization has to contend.

At the present time the fact of the infectiousness of consumption is firmly established in a scientific way, and enough is known of the natural history of the infective agent, the *bacillus of tuberculosis*, and of the ways in which it is communicated to man, to enable us to lay down rules for the prevention of the disease with more positiveness than was formerly possible.

The source of infection is two-fold—from one human being to another and from tuberculous animals to man. The tuberculosis of animals and human consumption are of the same nature.

From domestic animals, there is danger of contracting the disease by the use of the flesh, and especially by the use of the milk from those which are tuberculous. Many children die in their earlier years from various tubercular diseases, tubercular inflammation of the brain, "consumption of the bowels," etc. Many of these deaths are due to living amid infectious surroundings and breathing infected air, but a considerable portion die from infection received in the milk of tuberculous cows, or in that from mothers suffering from tuberculosis in some form.

By far the greatest source of infection, however, is consumptive human beings, but, fortunately, the ways in which the contagion is disseminated are but few, and by intelligent care they may be effectually controlled.

From the human source, we may consider the expectoration (the sputum) as practically the one great danger. The consumptive sputum usually contains an abundance of the infection, the bacilli, and these microscopic organisms are found to be capable of retaining their vitality and their infectious qualities for a long while, even after the sputum has been thoroughly dried.

As a general proposition the statement is true that the breath of the patient is not infectious, and that the same may be said of the sputum so long as it remains moist. Later experimental work, however, indicates a possibility of infection in the immediate vicinity of hard, open-mouthed coughing.

Another line of investigation has proved that the careless consumptive patient is a focus of infection, and a danger to all persons who come much in proximity to him, especially to those who dwell in the same rooms with him.

The reason of this is that the expectoration of the patient, spit upon floors, carpets, pocket handkerchiefs, or clothing, becomes dried and pulverized, and, floated in the air, still contains the infectious germs, and can not be inhaled without great danger.

Though infection may be regarded as the principal, the essential, cause of consumption, there are nevertheless various untoward influences which have much to do with increasing the death rate from this disease, and they should never be disregarded. The most important of these are the breathing of impure air—that of unventilated sleeping rooms, living rooms, schoolrooms, and offices—the use of food not sufficiently nutritious, and dwelling upon a damp soil.

Heredity, formerly thought to be a potent cause of pulmonary consumption and other forms of tuberculosis, is now known to have but little part in the causation of the disease. Since the infectiousness of the disease has been shown, family groups of consumption, "house epidemics," are now referred to infection rather than to hereditary influence. Though heredity is possible, the best authorities, the world over, now teach that cases of hereditary transmission of tuberculosis are very rare.

PREVENTION.

Rules for the patient.

Two facts should encourage the patient: One is that there is always an intrinsic tendency to recovery in the earlier stages of the disease, and that, under modern treatment, a large percentage of cases do recover; the other is that there is no reason for any person to think that he is doomed by heredity, no matter what his family history may be.

It should be impressed upon consumptive patients and other persons living with them that the sputum (what they cough up) is dangerous and must be properly disposed of. It must not become dry. There are several ways in which the sputum may be safely cared for.

A. Pressed paper spitcups, costing but little, are on the market. One or several can be used daily and, after it has been used, each cup with cover and contents can be burned.

B. Paper cups held in a metal frame may be used. After use, the cup and contents are burned.

C. Metal or porcelain spitcups or spittoons, each containing a small quantity of disinfecting solution 1, 2, or 3, may be used.

The final disposal of the sputum may be:

1. By pouring it down the water closet.

2. By cremation when practicable. (*a*) In a small fire outdoors. (*b*) In the house heater, using a stout sheet iron box with a handle three feet long. Partly fill the box with sawdust, or fold a paper inside it; pour in the contents of the spitcup or cuspidor; with the direct draft of the heater open, invert the box over the firepot, holding the box in place a moment until the flame or the heat sterilizes it. When the sputum is to be cremated, but a small quantity of the disinfecting solution should be used in the spittoon.

3. By setting the vessel aside, preferably in a warm place, so that the disinfectant may act eight or twelve hours longer. The quantity of disinfecting solution should be in excess of that of the sputum. Then bury or otherwise dispose of it so that flies and the domestic animals can not reach it.

The patient should have two spit cups or spittoons for alternate use. A cover should exclude flies. Cleansing can be done with washing soda and boiling water, or soap and hot water.

D. Knopf's aluminum pocket spit flask is very convenient, especially when the patient is away from home, is traveling, or is confined to his bed.

E. When away from his room, the patient may spit into Japanese paper napkins, to be put immediately into a rubber tobacco pouch until they can be burned.

F. Spitting into handkerchiefs should be avoided. If occasionally forced to do this, the handkerchief should be boiled before the sputum dries. Handkerchiefs upon which the sputum is allowed to dry surround the user with a halo of infection, infect the pocket and everything else they touch, and lessen the patient's chance of recovery. After coughing, the lips should not be wiped with the handkerchief used for the nose. The lips may be wiped with paper napkins, to be burned later.

Repress cough as much as possible. Cough gently, with the mouth closed as much as possible. Never swallow the sputum, by so doing, you favor the extension of the disease to the intestinal tract.

Do not soil personal or bed clothing with the sputum nor the hands when avoidable. Wash the hands often. Male patients who wear a mustache or beard should keep it closely clipped.

Do not infect the immediate surroundings of the home, nor sit upon the grass or hay or anywhere else where the sputum may be eaten by cattle, chickens, or other animals.

Rules for attendants.—The floors, woodwork, and furniture of rooms in which consumptive patients stay should be wiped with a damp cloth, not dusted nor swept in the dry way.

Clothing may be disinfected by boiling, as in ordinary laundry processes. Rooms may be disinfected with formaldehyd fumigation—large doses—supplemented with the washing of the floor with solution 7. This should be done every few weeks when practicable, while the rooms are occupied by the patient. If the floor or other surfaces are accidentally soiled with sputum, the spots should be wet and rubbed thoroughly with solution 7, 1, 2, or 3.

Rooms for consumptives should have no fixed carpets. A few rugs may replace them. They should frequently be carried into the open air and exposed to the action of direct sunshine several hours at a time. For the thorough disinfection of them, steam is the best. The tableware of the patient, the knife, fork, cup, and spoons particularly, should be kept separate and washed by themselves in scalding water.

In addition to the danger from infectious dust, if it is allowed to be diffused through the air, there are other possible ways of communicating the infection. It may be carried directly to the mouth by the fingers, or indirectly by handling articles of food. After soiling the hands, cleanse them carefully. Guard against inoculating cuts or abrasions of the hands with the sputum.

Rules for everybody.

A. Anything tending to lower the tone of the general health may act as a predisposing cause—insufficient nutriment, overwork, loss of sleep, worry, close and dusty air. Avoid these. Give sleeping rooms a prolonged airing and sunning by day, and as much night ventilation as is practicable. The dwelling place should be dry naturally or made so artificially. If it is thought that there is a family predisposition to consumption, an outdoor occupation should be chosen. Live in the open air and sunshine as much as possible.

B. Every new case of tuberculosis comes from some earlier case. The germs of this disease retain their vitality and their infectivity a long time under favoring conditions. Therefore do not bring into your house clothing formerly used by consumptives unless it has been thoroughly disinfected ; do not move into an infected house or rooms until the thoroughness of the disinfection is unquestionable ; do not put to your mouth pipes, wind instruments, money, or anything else that has been used or handled by consumptives ; do not buy bread, milk, or other articles of food, not to be cooked, from consumptives ; kissing, particularly lip to lip, is unsafe if one party to the act is tuberculous ; thorough cooking for meat, or a temperature somewhat below the boiling point, 176 F., for ten minutes for milk, will render these safe articles of food.

By observing the rules which are expressed and suggested in the foregoing, the principal, if not all, danger of infection may be avoided.

The open air treatment of consumptives and those who are threatened with tuberculous disease has given much better results than any other. Particularly in Germany, and to some extent in this country, such treatment has been systematized in "sanitaria" for consumptives. Here the patients have the advantage of a life under medical regulation, nutritious food, and such exercise or rest as each case requires; but the chief curative agent is an abundance of fresh air. Even in cold winter weather, patients, after a period of gradual habituation, and always guided by the judgment of the physician, pass almost the whole day in the open air, walking or sitting, or lying on resting places comfortably wrapped in blankets and furs. The results obtained in these institutions have been very successful even in those with climatic conditions less favorable than those of many parts of Maine. An abundance of pure air is the all important thing.

DISINFECTING SOLUTIONS.

Solution 1.

Carbolic acid (pure liquefied)	7 ounces.
Water	1 gallon.

Mix. This is approximately a 5-per cent solution. For the disinfection of clothing this solution, mixed half and half with water, will do.

Solution 2.

Lysol	5 ounces.
Water	1 gallon.

Mix. This may be used as a substitute for solution 1, one-half the strength sufficing for uncolored clothing. Many colors are changed by it.

Solution 3.

Solutol (crude or pure)	½ pint.
Water	2 or 3 gallons.

Mix. This is a very efficient disinfectant for excreta, tuberculous sputum, and gross disinfection generally. If to be used in dwelling houses, or wherever the odor of the crude product would be offensive, pure solutol should be used.

Solution 7.

Solution of formaldehyd (formalin)	6 ounces.
Water	1 gallon.

Mix. This mixture contains a little less than 2 per cent of formaldehyd.

It is a good plan to dissolve 4 or 5 tablespoonfuls of common salt in each quart of solution 1 or solution 2, thereby increasing considerably the disinfecting power of the solution.

[Reports to the Surgeon-General United States Marine-Hospital Service.]

Infection of vessels with yellow fever at Panama.

Columbia River Quarantine,
Astoria, Oreg., January 16, 1900.

Sir: I have the honor to report certain facts concerning the yellow fever infection of vessels at Panama, as learned from vessels arriving at this station during the past three months. During the past summer, yellow fever broke out on apparently an unusually large number of